

# DRAFT Sea-Level Rise Policy Guidance Public Comment

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Friday, February 14, 2014 2:02 PM

Greetings California Coastal Commission,

My name is Malcolm Johnson, a graduate student at the Monterey Institute of International Studies studying ocean and coastal resource management. Over the last two years I have had the opportunity to familiarize myself with laws and policies pertaining to the coastal resources of California as well as receiving a foundational knowledge of the global impacts of climate change and sea-level rise (SLR). The purpose this comment letter is to call to attention some of the issues that may have been overlooked by the CCC, including but limited to: discrepancies with science, institutional capacity concerns, and concerns over biodiversity loss. I hope that the next version of the Sea-Level Rise Policy Guidance takes into account the trepidations brought up in this letter.

Prior to discussing the issues with the document I'd like to congratulate the CCC on tackling one of the greatest challenges to coastal ecosystems/communities. By acknowledging that climate change is happening and that sea-level rise is an inevitable result places California in a position of leadership with respect to solutions versus a global problem. It is also great that the policy guide emphasizes the local nature of climate impacts, i.e. that although global sea-level will rise, local communities will experience varying degrees of SLR based on a combination of factors. Climate change in general will have vastly different impacts on individual locations throughout the globe, and even throughout California, which means that each community will need to plan for a range of changes based on local factors. In general, the policy guide represents an achievement for the CCC and its quality is exceptionally high.

The first notable issue with the policy guide is an issue with the science that is included within the document. The importance of using the best available science should be reemphasized, particularly due to the use for planning coastal communities over the next hundred years. The current estimates for SLR, both globally and in California, tend to be more conservative than most scientific estimates (Horton, Rahmstorf, Engelhart, & Kemp, 2014). Even the IPCC 5th Assessment, referenced in the policy guide, provides different ranges for SLR that tends to be on the higher end, likely resulting in more SLR than estimated (Sabine, 2014). In utilizing conservative estimates for SLR the CCC provides communities with a false sense of security over the next 50 years (a likely maximum time scale for local plans) (Martinich, Neumann, Ludwig, & Jantarasami, 2013). Additionally, the IPCC also describes the issue with estimating SLR out to 100 years, where SLR will continue to increase over the next millennia based on current CO2 emissions (Cazenave & Cozannet, 2014). Another issue with the science in the document is the disregard of synergistic impacts of SLR. Current coastal development (i.e. harbors); various forms of sediment management (i.e. dredging); and influences on watersheds (i.e. dams) all combine to impact the adaptive capacity of the coast. The challenge is even larger due to the fact that inland communities, with no threat of SLR, can have an impact on the coastal communities through management of the watershed resources (Inman & Jenkins, 1999; Kirwan & Megonigal, 2013; Willis & Griggs, 2003). Additionally, the increase intensity and frequency of storm events, possibly leading to more coastal flooding, will make adapting to SLR even more challenging than outlined in the policy guide (Woodruff, Irish, & Camargo, 2013). Without addressing the issues with the science in the document, local communities will be unable to adapt to the

true issues of SLR. I recommend updating the SLR estimates to reflect more liberal predictions, providing some sort of communication mechanism between coastal and inland communities, and making sure that the other impacts of climate change are mentioned throughout the document. Without coordination between inland communities and the coast, the adaptation capabilities of the coast can be over-estimated resulting in unforeseen challenges (Nicholls & Mimura, 1998).

The second concern I'd like to bring up concerning the policy guide is with regards to institutional issues. One major aspect of the document is the requirement for local authorities to update their LCPs based on the local impacts of SLR. Currently, coastal plans are outdated and lack any recent updates, which means the local authorities will need to find the capacity and capability to proceed through the process (Borberg, Grant, Brandt, Stein, & NWFSC, 2013). Some coastal communities have the revenue and the institutional capacity, in the form of employees with coastal management experience, but most lack the resources to go through the lengthy process of updating their LCPs (Burkett, 2013). This means that some communities will be able to quickly follow the guidelines outlined in the document while others will scramble to put together a document that would probably lack the insight needed for addressing SLR (Barnett, Fincher, Hurlimann, Osbaldiston, & Mortreux, n.d.). This brings up the questions of: who should fund the process of updating LCPs? Should the state come up with the resources for communities that can't afford to do so on their own? In order to deal with this issue of scale, I would consider encouraging the regionalization of LCPs, i.e. having cities and counties working together to update plans based on bioregions, watersheds, or beaches (Neil Adger, Arnell, & Tompkins, 2005). This could also address the issue of inland communities impacting the coastal adaptive capacity. Another possible solution could be the creation of technical advisory councils, which include organizations like the Center for the Blue Economy (MIIS). These councils could provide a collaborative process utilizing both socio-economic data and scientific research to provide communities (or regions) with suggested updates for LCPs. This could take a significant amount of burden off the shoulders of communities that lack the experience in coastal resource management and planning.

The final issue with the guiding policy is based on biodiversity and the development issues with the CDPs. Currently, about  $\frac{2}{3}$  of every threatened and endangered (T+E) species depends on coastal habitats (Barbour & Kueppers, 2012). Unfortunately, the most valuable land areas for the T+E species are not included in coastal management plans and may very well be underwater due to future SLR. This provides a new challenge for coastal communities, which will need to not only address the impact of SLR on development but also on biodiversity (Kirwan & Megonigal, 2013). The guiding document does not emphasize the importance of biodiversity, i.e. that ecosystem goods and services depend on healthy biodiversity, which means protection may not be included in the LCPs. This could cause complications with other agencies when SLR begins to change coastal habitats (Hanak & Moreno, 2012). This means that recovery and restoration will need to be approached in a different manner due to the changes in climate. This manner does not mean allowing developers to go through a permitting process that allows for continued development along the coastline. A better solution to the developer based CDP process would be precautionary, comprehensive, and adaptive to the changing coastline (Hanak & Moreno, 2012). By limiting the impacts of coastal development, rather than just mitigating the impacts, coastlines will be more resilient and their adaptive capacity will remain intact.

In conclusion, it is clear that the Draft Sea-Level Rise Policy Guidance is not the end of the process but rather the beginning of a collaborative process that will go through iterations before ensuring resiliency for California's coastal resources. Dealing with the scientific gaps in the document will improve the relative time scale it will be applicable to. Providing some form of institutional capacity, either through resource sharing or regionalization, will ensure success for the LCPs in dealing with SLR. Additionally, emphasizing the importance of biodiversity will guarantee sustainable ecosystem services. Overall, the policy guidance should be considered an achievement for the CCC and for California in leading the way in solutions to SLR. Hopefully this letter will call attention to some issues in the document in order to ensure

the final version will provide the optimal protection for our coastal resources.

Sincerely,

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Education is the most powerful weapon which you can use to change the world. ~Nelson Mandela

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